

polypeptide retains its native tertiary structure and methods of preparation. This invention provides an isolated polypeptide comprising an amino acid sequence of a N-terminal choline binding protein A truncate, wherein the polypeptide has lectin activity and does not bind to choline. This invention provides an isolated immunogenic polypeptide comprising an amino acid sequence of a N-terminal choline binding protein A truncate. This invention provides an isolated nucleic acid encoding a polypeptide comprising an amino acid sequence of a N-terminal choline binding protein A truncate. Lastly, this invention provides pharmaceutical compositions, vaccines, and diagnostic and therapeutic methods of use.

In the Claims:

Please cancel claims 1-45 without prejudice or disclaimer.

Please add the following new claims:

46. An isolated polypeptide comprising an amino acid sequence as set forth in SEQ ID NO:5, wherein said polypeptide does not bind to choline and has lectin activity.

47. The isolated polypeptide of claim 46, wherein said polypeptide comprises SEQ ID NO:3.

48. The isolated polypeptide of claim 46, wherein said polypeptide comprises SEQ ID NO:1.

49. The isolated polypeptide of claim 46, wherein said polypeptide comprises SEQ ID NO:24.

50. The isolated polypeptide of claim 46, wherein said polypeptide is immunogenic.

51. The isolated polypeptide of claim 46, wherein said polypeptide comprises an amino acid sequence having up to 475 amino acids.

52. The isolated polypeptide of claim 51, wherein said polypeptide comprises an amino acid sequence having up to 460 amino acids.

53. A pharmaceutical composition comprising the polypeptide of claim 46 and a pharmaceutically acceptable adjuvant, carrier, or diluent.

54. An isolated polypeptide comprising an amino acid sequence as set forth in SEQ ID NO:4, wherein said polypeptide does not bind to choline and has lectin activity.

55. The isolated polypeptide of claim 54, wherein said polypeptide comprises SEQ ID NO:22.

56. The isolated polypeptide of claim 54, wherein said polypeptide is immunogenic.

57. The isolated polypeptide of claim 54, wherein said polypeptide comprises an amino acid sequence having up to 475 amino acids.

58. The isolated polypeptide of claim 54, wherein said polypeptide comprises an amino acid sequence having up to 460 amino acids.

*Sub F2*

59. An isolated polypeptide comprising a fragment of an amino acid sequence of SEQ ID NO:24, wherein said fragment does not bind to choline, has lectin activity and comprises at least 52 consecutive amino acids of SEQ ID NO:24.

60. An isolated polypeptide comprising an amino acid sequence as set forth in SEQ ID NO: 5, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, wherein said polypeptide does not bind choline and has lectin activity.

61. The isolated polypeptide of claim 60, wherein said polypeptide comprises the amino acid sequence set forth in SEQ ID NO:3, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, and said polypeptide does not bind choline and has lectin activity.

62. The isolated polypeptide of claim 60, wherein said polypeptide comprises the amino acid sequence set forth in SEQ ID NO:1, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, and said polypeptide does not bind choline and has lectin activity.

63. The isolated polypeptide of claim 60, wherein said polypeptide comprises the amino acid sequence set forth in SEQ ID NO:24, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, and said polypeptide does not bind choline and has lectin activity.

*D2*

64. The isolated polypeptide of claim 60, wherein said polypeptide is immunogenic against bacterial infection.

65. The isolated polypeptide of claim 60, wherein said amino acid substitutions comprise host preferred amino acid substitutions.

66. The isolated polypeptide of claim 60, wherein said amino acid substitutions comprise conservative amino acid substitutions.

67. An isolated polypeptide comprising an amino acid sequence set forth in SEQ ID NO: 4, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, wherein said polypeptide does not bind choline and has lectin activity.

68. The isolated polypeptide of claim 67, wherein said polypeptide comprises the amino acid sequence set forth in SEQ ID NO:22, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, and said polypeptide does not bind choline and has lectin activity.

69. An isolated polypeptide comprising an analog of an amino acid sequence set forth in SEQ ID NO: 1, 3, 4, 5, 7, 9, 10, 11, 22, 23, or 24 wherein said polypeptide does not bind choline and has lectin activity.

70. An isolated polypeptide comprising a derivative of an amino acid sequence set forth in SEQ ID NO: 1, 3, 4, 5, 7, 9, 10, 11, 22, 23, or 24 wherein said polypeptide does not bind choline and has lectin activity.

71. An isolated polypeptide comprising the amino acid sequence set forth in SEQ ID NO: 1, 3, 4, 5, 7, 9, 10, 11, 22, 23, or 24, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, wherein said polypeptide retains native tertiary structure, does not bind choline, and has lectin activity.

72. An isolated polypeptide comprising the amino acid sequence set forth in SEQ ID NO: 1, 3, 4, 5, 7, 9, 10, 11, 22, 23, or 24, wherein said polypeptide retains native tertiary structure, does not bind choline, and has lectin activity.

73. A vaccine comprising a polypeptide having the amino acid sequence set forth in SEQ ID NO: 1, 3, 4, 5, 7, 9, 10, 11, 22, 23, or 24, wherein said polypeptide does not bind choline and has lectin activity.

*Sub E5* 74. An isolated polypeptide comprising an amino acid sequence as set forth in SEQ ID NO:11, wherein said polypeptide does not bind to choline and has lectin activity.

75. The isolated polypeptide of claim 74, wherein said polypeptide comprises SEQ ID NO:9.

76. The isolated polypeptide of claim 74, wherein said polypeptide comprises SEQ ID NO:7.

77. The isolated polypeptide of claim 74, wherein said polypeptide is immunogenic.

*Sub E10* 78. The isolated polypeptide of claim 74, wherein said polypeptide comprises an amino acid sequence having up to 475 amino acids.

79. The isolated polypeptide of claim 78, wherein said polypeptide comprises an amino acid sequence having up to 460 amino acids.

*D2* 80. A pharmaceutical composition comprising the polypeptide of claim 74 and a pharmaceutically acceptable adjuvant, carrier, or diluent.

*Sub E10* 81. An isolated polypeptide comprising an amino acid sequence as set forth in SEQ ID NO:10, wherein said polypeptide does not bind to choline and has lectin activity.

82. The isolated polypeptide of claim 81, wherein said polypeptide comprises SEQ ID NO:23.

83. The isolated polypeptide of claim 81, wherein said polypeptide is immunogenic.

84. The isolated polypeptide of claim 81, wherein said polypeptide comprises an amino acid sequence having up to 475 amino acids.

85. The isolated polypeptide of claim 81, wherein said polypeptide comprises an amino acid sequence having up to 460 amino acids.

86. An isolated polypeptide comprising a fragment of an amino acid sequence of SEQ ID NO:7, wherein said fragment does not bind to choline, has lectin activity and comprises at least 52 consecutive amino acids of SEQ ID NO:7.

87. An isolated polypeptide comprising an amino acid sequence set forth in SEQ ID NO: 11, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, and said polypeptide does not bind choline and has lectin activity.

88. The isolated polypeptide of claim 87, wherein said polypeptide comprises the amino acid sequence set forth in SEQ ID NO:9, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, and said polypeptide does not bind choline and has lectin activity.

89. The isolated polypeptide of claim 87, wherein said polypeptide comprises the amino acid sequence set forth in SEQ ID NO:7, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, and said polypeptide does not bind choline and has lectin activity.

90. The isolated polypeptide of claim 87, wherein said polypeptide is immunogenic against bacterial infection.

91. The isolated polypeptide of claim 87, wherein said amino acid substitutions comprise host preferred amino acid substitutions.

92. The isolated polypeptide of claim 87, wherein said amino acid substitutions comprise conservative amino acid substitutions.

93. An isolated polypeptide comprising an amino acid sequence set forth in SEQ ID NO: 10, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, and said polypeptide does not bind choline and has lectin activity.

94. The isolated polypeptide of claim 93, wherein said polypeptide comprises the amino acid sequence set forth in SEQ ID NO:23, wherein said amino acid sequence comprises at least one to 57 amino acid substitutions, and said polypeptide does not bind choline and has lectin activity.

#### REMARKS

Claims 1-45 have been canceled without prejudice or disclaimer.

Claims 46-94 have been added. Support for these claims can be found throughout the specification and in the originally filed claims.

Specifically, claims 46, 47, 48, 49, 54, 55, 74, 75, 76, 81, and 82, recite a polypeptide comprising the sequence set forth in SEQ ID NO:5, 3, 1, 24, 4, 22, 11, 9, 7, 10, and 23, respectively, wherein said polypeptide "does not bind to choline" and "has lectin activity" Support for the terms "does not bind choline" and has "lectin activity" can be found, for example, on page 20, lines 19-21 of the specification.